

In the Claims

Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts.

1. (Original) A clipping device intended for absorbing current peaks from 1 to 10 amperes, formed of a vertical NPN transistor, having an unconnected base, an emitter connected to a terminal on which positive voltage peaks are likely to appear, and a grounded collector, the transistor parameters being set so that it exhibits a negative dynamic resistance.

2. (Original) The device of claim 1, wherein the base resistance is smaller than 1500 ohms/square.

3. (Original) The device of claim 1, wherein the relative arrangement of the emitter and of the base is such that the breakdown occurs in volume.

4. (Currently amended) ~~The device of claim 3,~~ A clipping device intended for absorbing current peaks from 1 to 10 amperes, formed of a vertical NPN transistor, having an unconnected base, an emitter connected to a terminal on which positive voltage peaks are likely to appear, and a grounded collector, the transistor parameters being set so that it exhibits a negative dynamic resistance, wherein the relative arrangement of the emitter and of the base is such that the breakdown occurs in volume, and wherein the emitter extends beyond the base and the emitter periphery is surrounded with a P-type region more lightly doped than the base.

5. (Original) The clipping device of claim 3, wherein the base extends beyond the emitter, the emitter periphery being formed of a lightly-doped N-type region.

6. (New) A clipping device to protect a circuit from overvoltages, the clipping device comprising:

a first contact arranged for connection to the circuit;

a second contact arranged for connection to a reference potential; and

a semiconductor component coupled between the first and second contacts and adapted to break down when an overvoltage is applied to the first contact;

wherein the clipping device exhibits a negative dynamic resistance after breakdown of the semiconductor component at least for currents in a range from 1 to 10 amperes.

7. (New) The clipping device of claim 6, wherein after breakdown, an increase in current through the semiconductor component corresponds to a reduction in voltage between the first and second contacts.

8. (New) The clipping device of claim 6, wherein the semiconductor component includes a first PN junction and a second PN junction arranged to form a vertical transistor.

9. (New) The clipping device of claim 8, wherein the first PN junction is formed between an emitter region electrically coupled to the first contact and an unconnected base region, and the second PN junction is formed between the unconnected base region and a collector region electrically coupled to the second contact.

10. (New) The clipping device of claim 9, wherein the emitter region has a first conductivity type and a first doping level and the base region has a second conductivity type and a second doping level.

11. (New) The clipping device of claim 10, wherein the emitter region extends beyond the base region in a horizontal direction.

12. (New) The clipping device of claim 11, further comprising a ring-shaped region of the second conductivity type formed at least around the horizontal periphery of the emitter region, the ring-shaped region having a third doping level less than the second doping level.

13. (New) The clipping device of claim 10, wherein the base region extends further than the emitter region in a horizontal direction.

14. (New) The clipping device of claim 13, further comprising a ring-shaped region of the first conductivity type formed at least around the horizontal periphery of the emitter region, the ring-shaped region having a third doping level less than the first doping level.

15. (New) The clipping device of claim 6, wherein the range is between 1 and approximately 5 amperes.

16. (New) The clipping device of claim 6, wherein the semiconductor component comprises a vertical NPN transistor having an unconnected base.
